

Low-Cost, Low-Power Sensor For In-Flight Unsteady Aerodynamic Force and Moment Estimation, Phase I

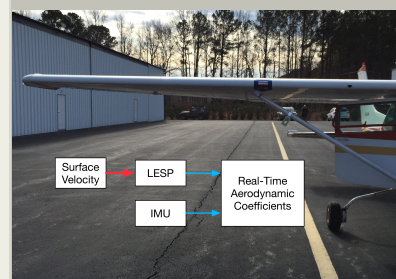
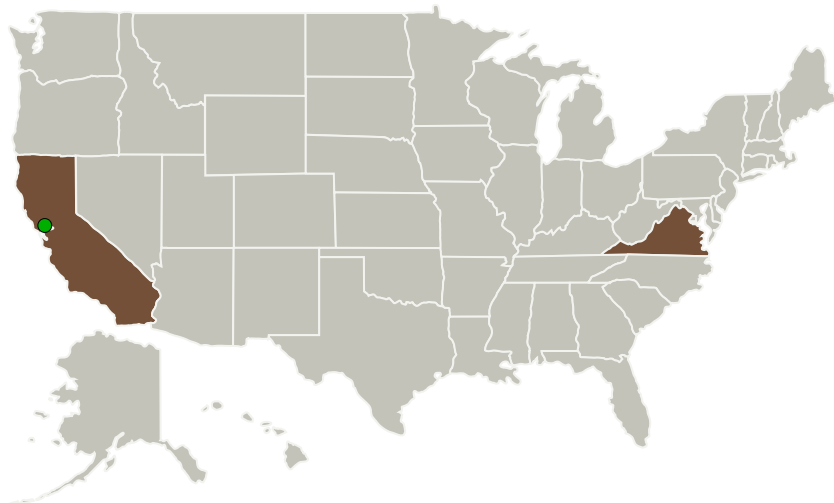
Completed Technology Project (2017 - 2017)



Project Introduction

Tao Systems and University of Minnesota propose to develop a sensor system providing sectional aerodynamic forces and moments with fast response, low volume/size/power requirements for ease of installation, and minimal calibration requirements. Aviation loss of control (LOC) accidents often result from stall and uncertain weather/flow conditions, often at low altitudes e.g., take-off/landing. The sensor system: (1) uses a robust transduction mechanism, (2) has a one-time lifetime calibration requiring minimal maintenance, (3) provides monotonic output with speed and circulation, and is (4) relatively insensitive to environmental parameters such as flight altitude, pressure, temperature, and density. This technology provides real-time output for energy state awareness under both nominal and off-nominal flight conditions.

Primary U.S. Work Locations and Key Partners



Low-Cost, Low-Power Sensor For In-Flight Unsteady Aerodynamic Force and Moment Estimation, Phase I Briefing Chart Image

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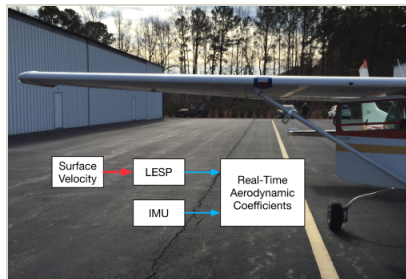


Organizations Performing Work	Role	Type	Location
Tao of Systems Integration, Inc.	Lead Organization	Industry Minority-Owned Business, Small Disadvantaged Business (SDB)	Hampton, Virginia
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations

California	Virginia
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Images



Briefing Chart Image

Low-Cost, Low-Power Sensor For In-Flight Unsteady Aerodynamic Force and Moment Estimation, Phase I Briefing Chart Image (<https://techport.nasa.gov/image/134832>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Tao of Systems Integration, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

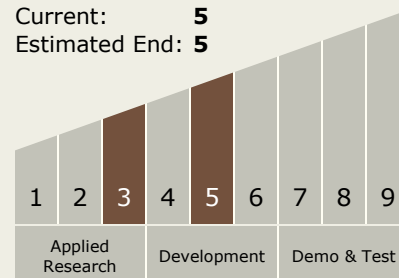
Carlos Torrez

Principal Investigator:

Arun Mangalam

Technology Maturity (TRL)

Start: 3
Current: 5
Estimated End: 5



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Technology Areas

Primary:

- TX15 Flight Vehicle Systems
 - └ TX15.1 Aerosciences
 - └ TX15.1.1 Aerodynamics

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System